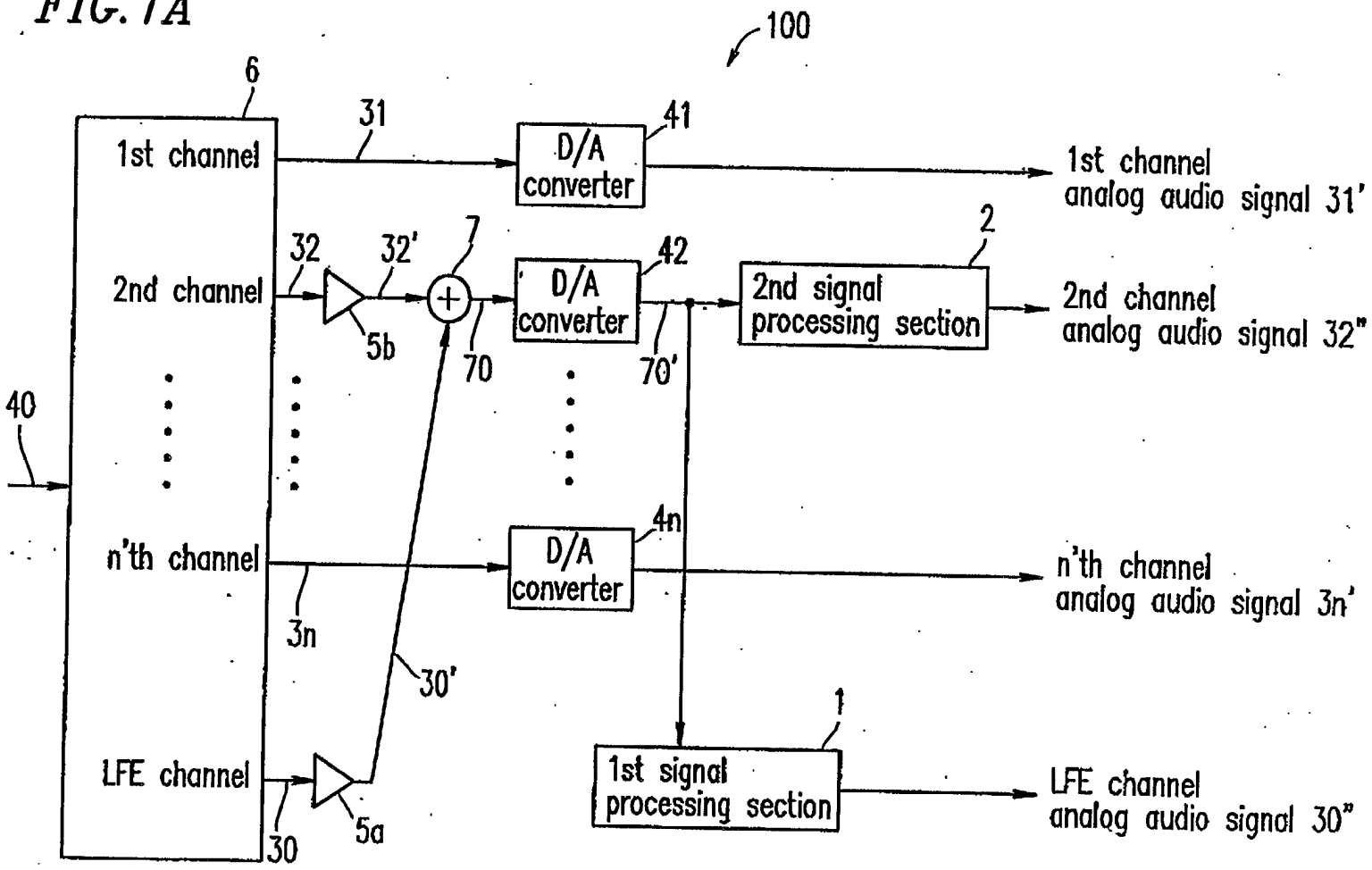
FIG. 1A



P25924

FIG. 1B

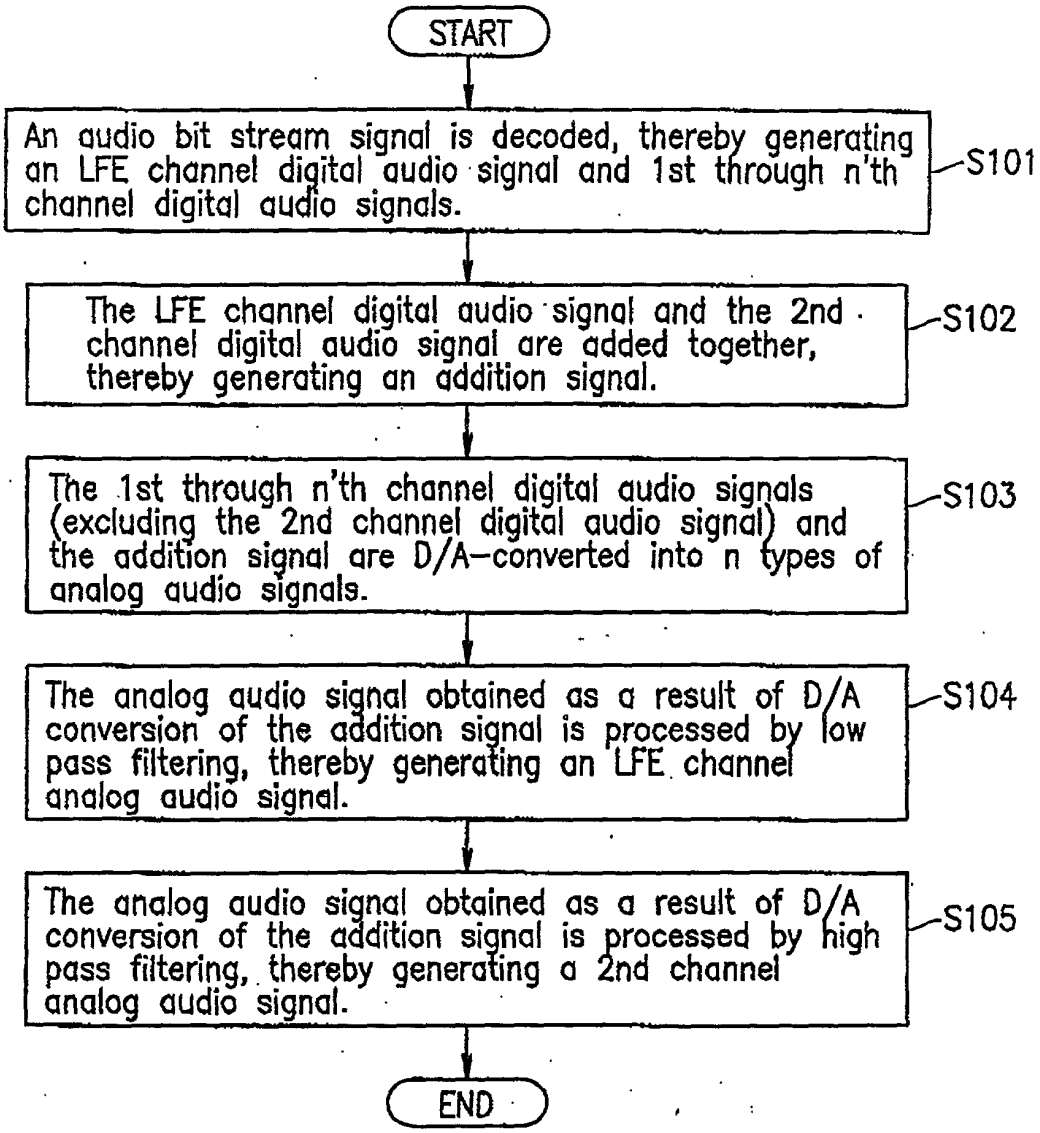

START
An audio bit stream signal is decoded, thereby generating an LFE channel digital audio signal and 1st through n'th channel digital audio signals.
S101
The LFE channel digital audio signal and the 2nd channel digital audio signal are added together, thereby generating an addition signal.
S102
The 1st through n'th channel digital audio signals (excluding the 2nd channel digital audio signal) and the addition signal are D/A-converted into n types of analog audio signals.
S103
The analog audio signal obtained as a result of D/A conversion of the addition signal is processed by low pass filtering, thereby generating an LFE channel analog audio signal.
S104
The analog audio signal obtained as a result of D/A conversion of the addition signal is processed by high pass filtering, thereby generating a 2nd channel analog audio signal.
S105
END

FIG. 2A

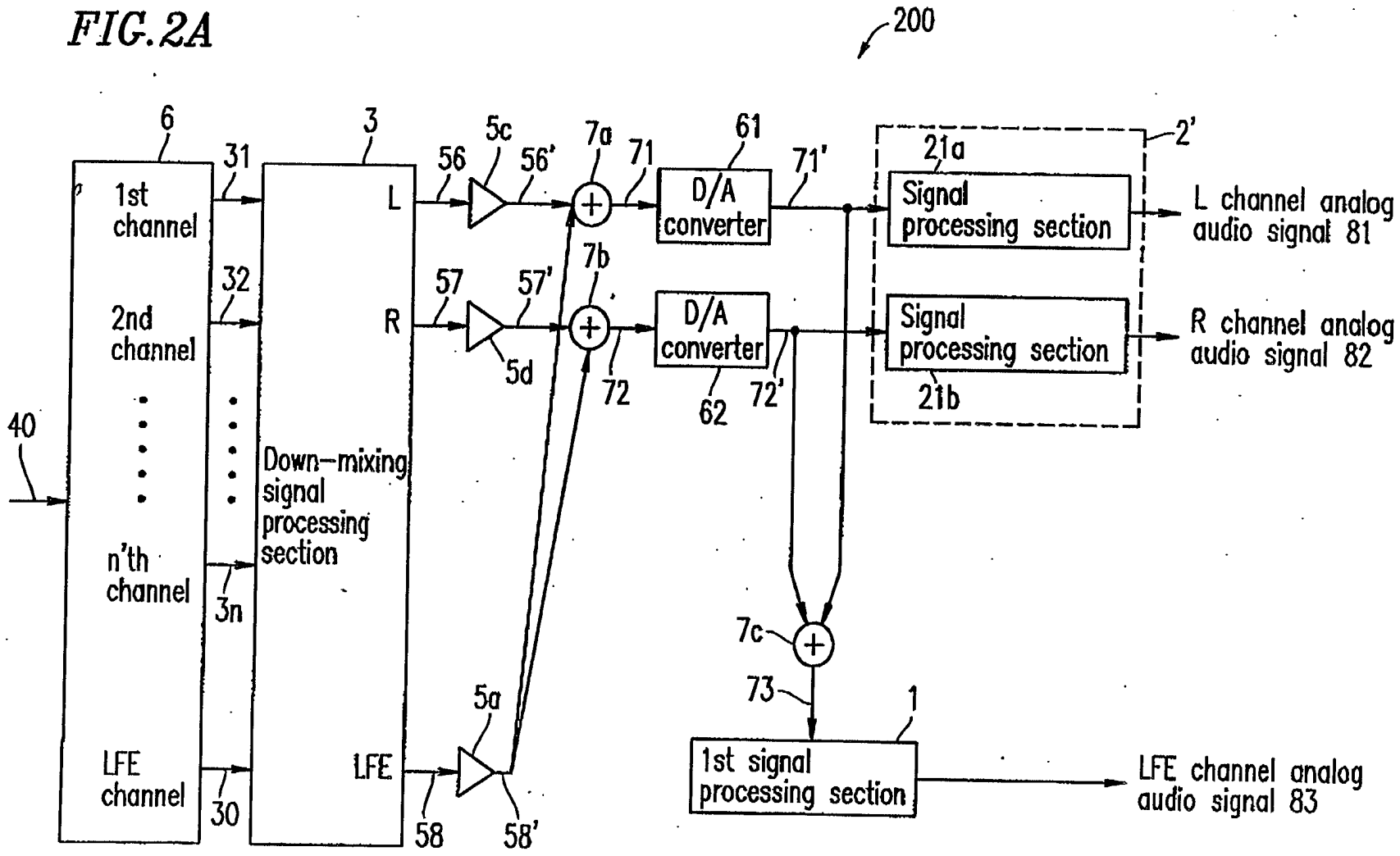

200
6
3
1st channel
2nd channel
n'th channel
LFE channel
31
32
3n
30
40
Down-mixing signal processing section
L
R
LFE
56
56'
57
57'
58
58'
5c
5d
5a
7a
7b
7c
71
72
73
61
62
D/A converter
D/A converter
71'
72'
2'
21a
21b
Signal processing section
Signal processing section
1
1st signal processing section
L channel analog audio signal 81
R channel analog audio signal 82
LFE channel analog audio signal 83
P25924

FIG.2B

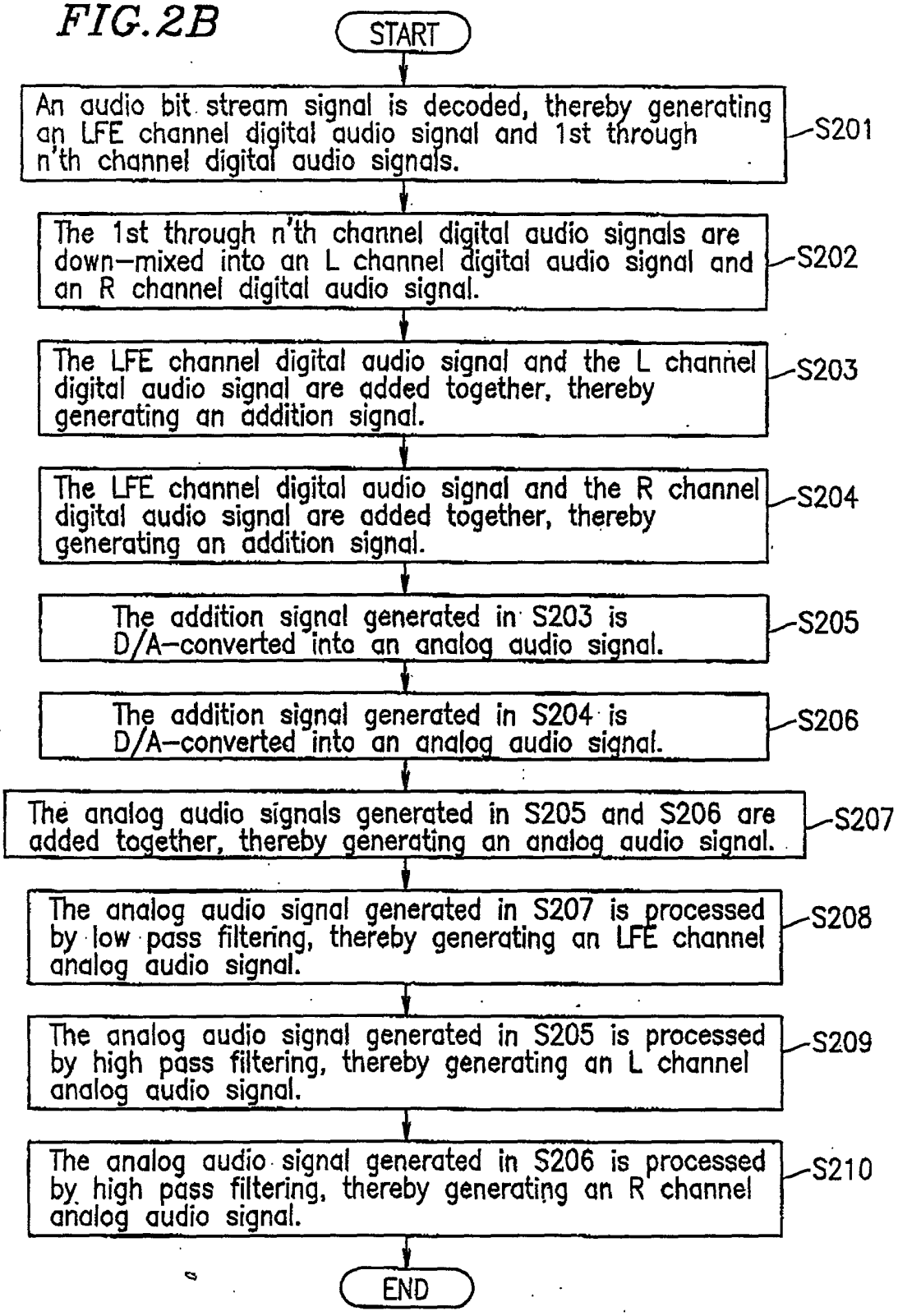

START
An audio bit stream signal is decoded, thereby generating an LFE channel digital audio signal and 1st through n'th channel digital audio signals.
S201
The 1st through n'th channel digital audio signals are down-mixed into an L channel digital audio signal and an R channel digital audio signal.
S202
The LFE channel digital audio signal and the L channel digital audio signal are added together, thereby generating an addition signal.
S203
The LFE channel digital audio signal and the R channel digital audio signal are added together, thereby generating an addition signal.
S204
The addition signal generated in S203 is D/A-converted into an analog audio signal.
S205
The addition signal generated in S204 is D/A-converted into an analog audio signal.
S206
The analog audio signals generated in S205 and S206 are added together, thereby generating an analog audio signal.
S207
The analog audio signal generated in S207 is processed by low pass filtering, thereby generating an LFE channel analog audio signal.
S208
The analog audio signal generated in S205 is processed by high pass filtering, thereby generating an L channel analog audio signal.
S209
The analog audio signal generated in S206 is processed by high pass filtering, thereby generating an R channel analog audio signal.
S210
END

FIG.2C

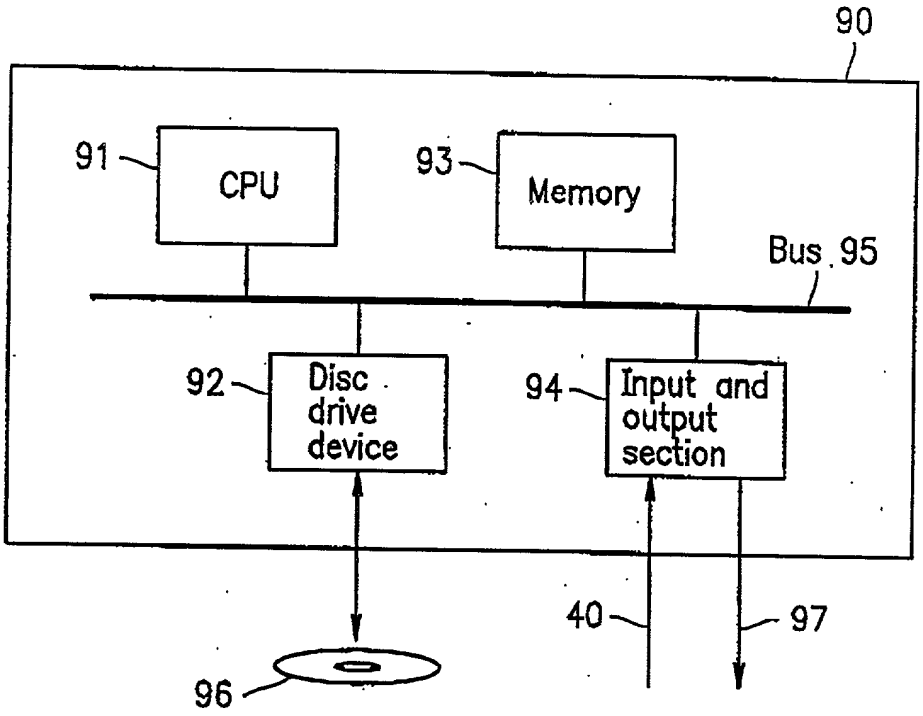


FIG. 3

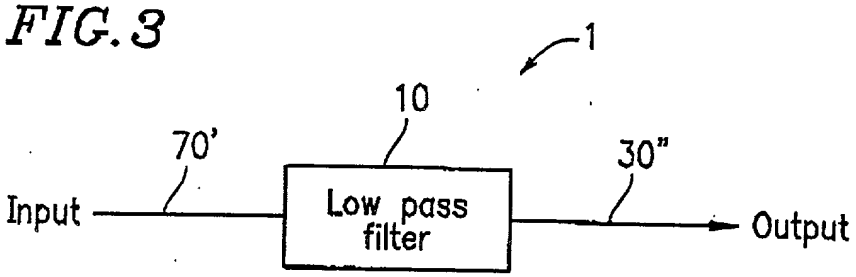


FIG. 4

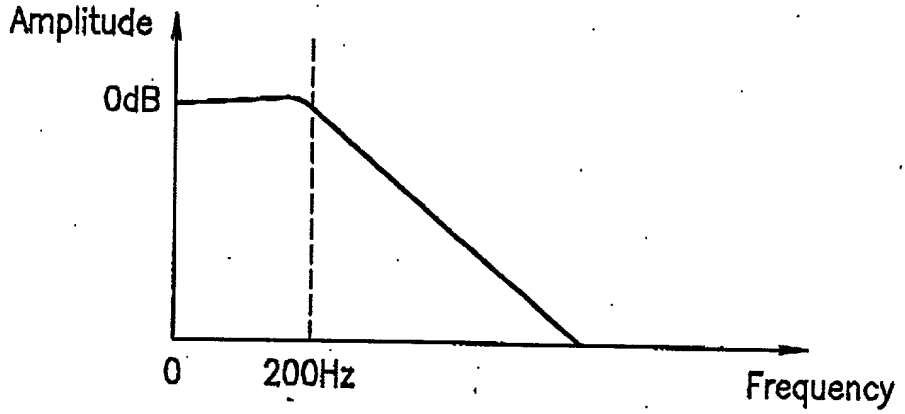


FIG. 5

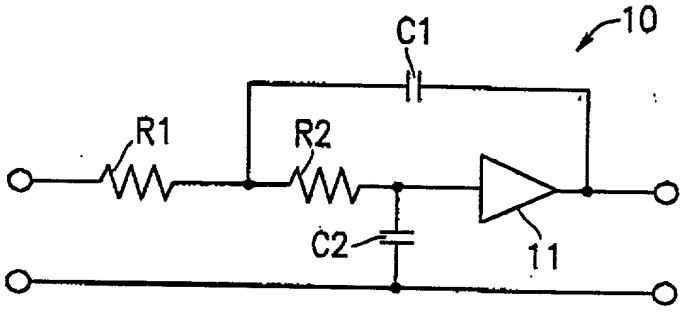


FIG. 6

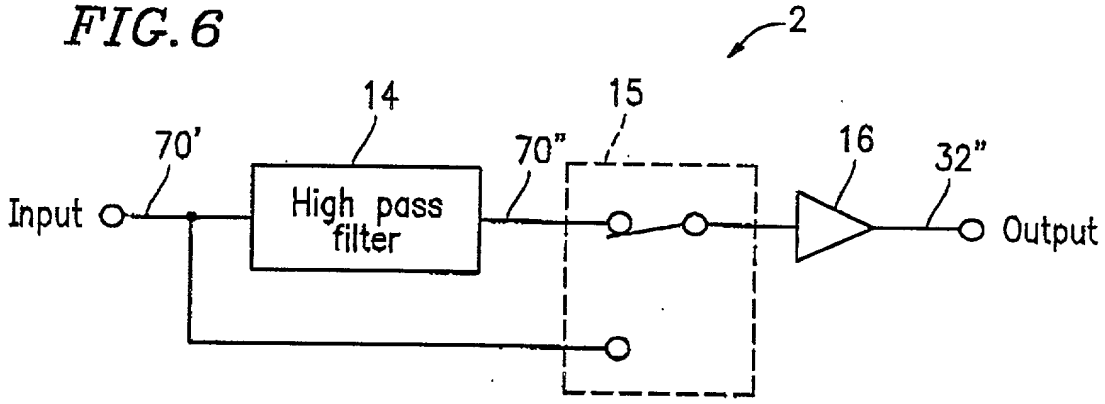


FIG. 7

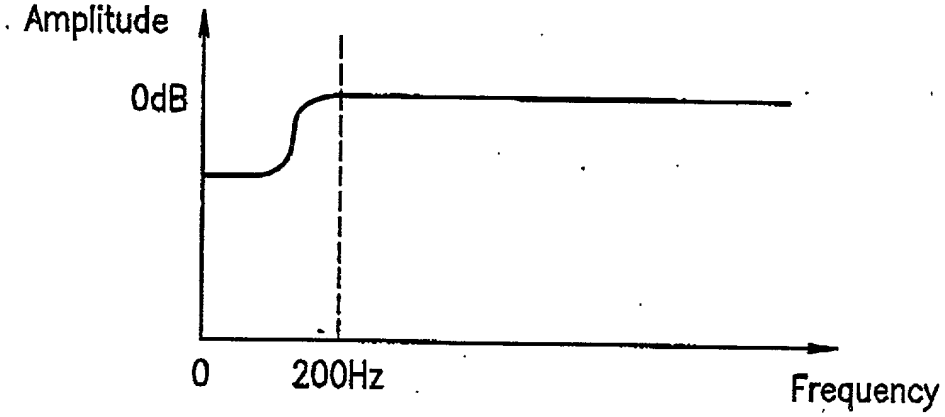


FIG. 8

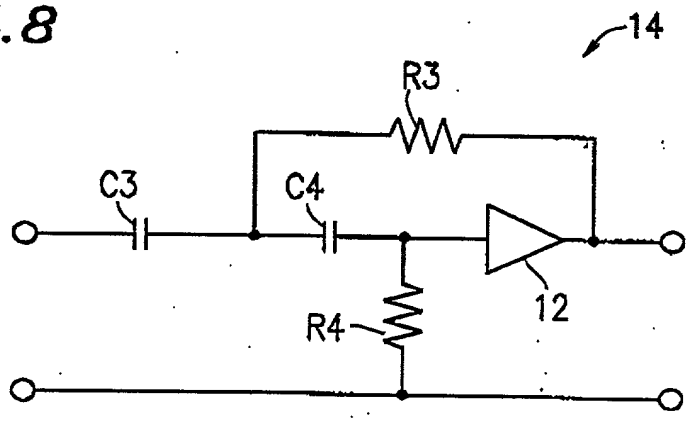


FIG. 9

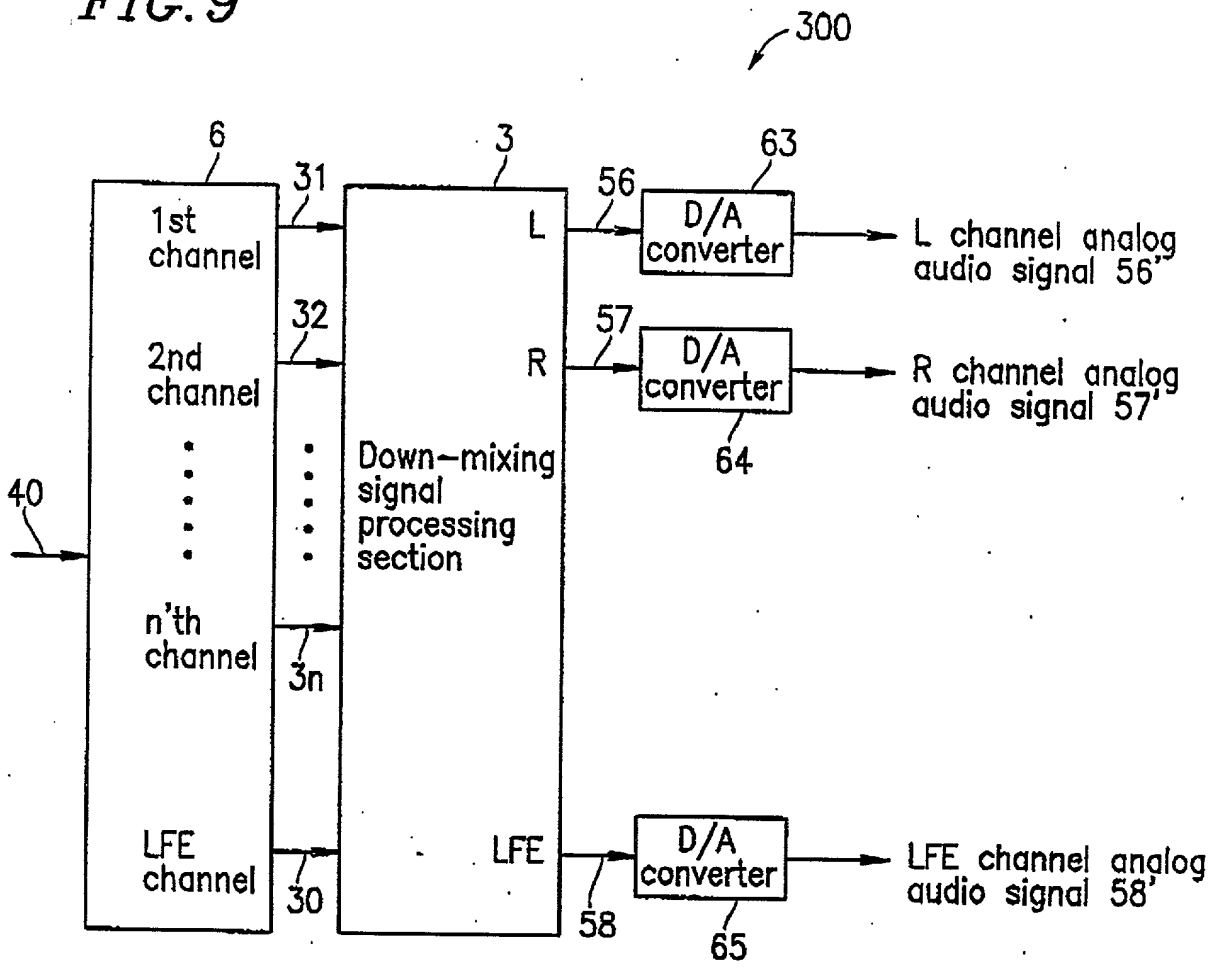

300
6
3
63
31
56
1st channel
L
D/A converter
L channel analog audio signal 56'
32
57
2nd channel
R
D/A converter
R channel analog audio signal 57'
64
40
Down-mixing signal processing section
n'th channel
3n
LFE channel
30
LFE
D/A converter
LFE channel analog audio signal 58'
58
65

FIG. 10

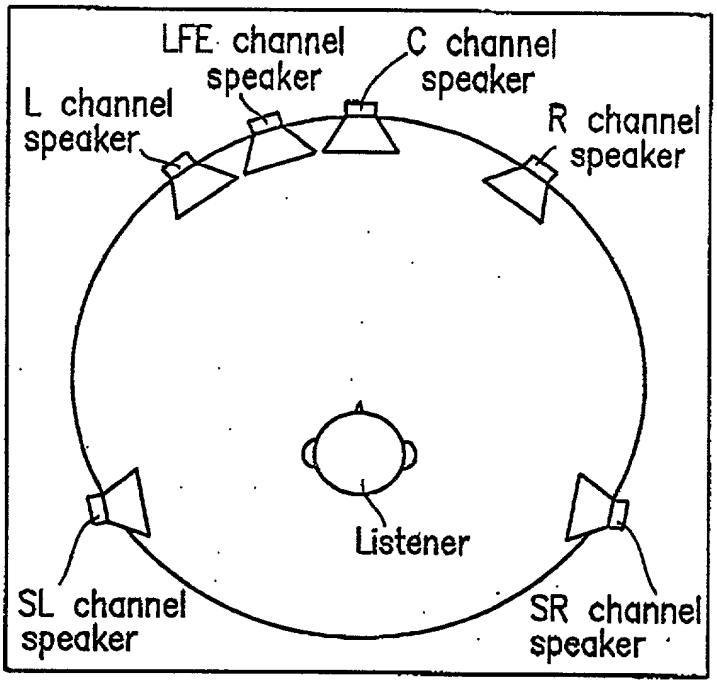
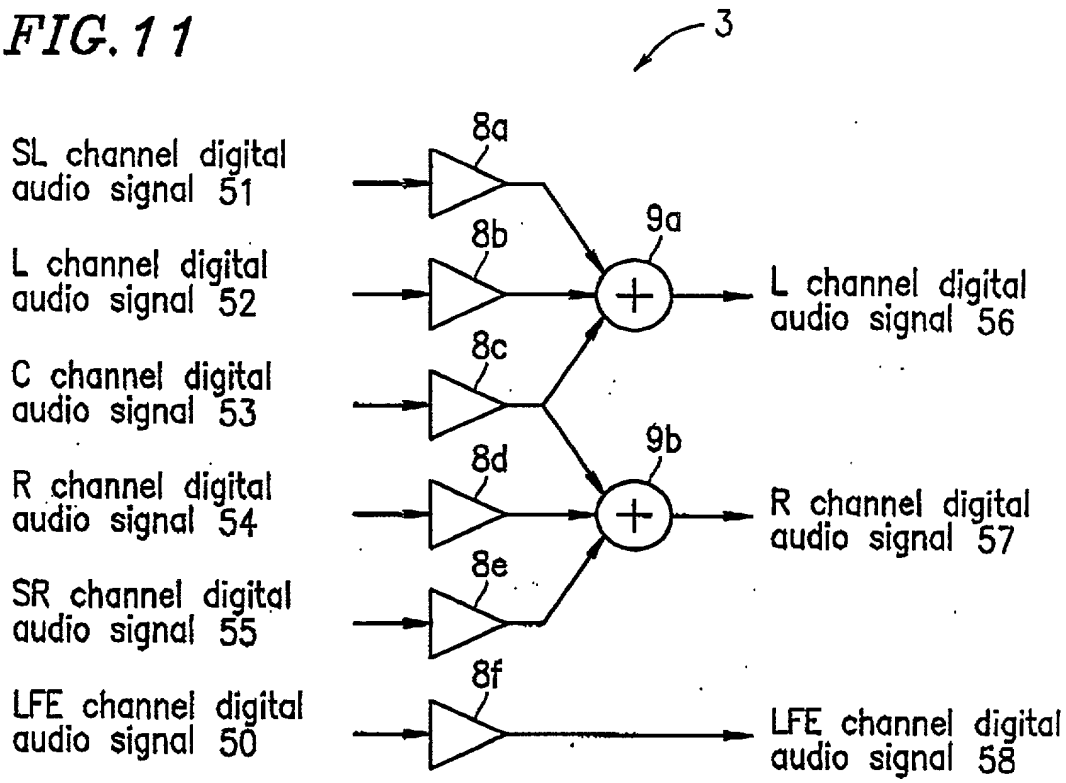

LFE channel speaker
C channel speaker
L channel speaker
R channel speaker
Listener
SL channel speaker
SR channel speaker

FIG. 11


3
SL channel digital audio signal 51
L channel digital audio signal 52
C channel digital audio signal 53
R channel digital audio signal 54
SR channel digital audio signal 55
LFE channel digital audio signal 50
8a
8b
8c
8d
8e
8f
9a
9b
L channel digital audio signal 56
R channel digital audio signal 57
LFE channel digital audio signal 58